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University-employer partnerships: petroleum engineering work-based learning models using adopted Merrill's first principles of instruction.

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University-Employer Partnerships: Petroleum Engineering Work-Based Learning Models Using Adopted Merrill's First Principles of Instruction

1. Engineering Education Challenges | 2. Engineering Models of WBL

• WBL is a significant element of CPD and lifelong learning.

• The gap between knowledge and skills needed at work and those gained through formal HE has been reported.

• A number of companies are turning to the HE sector to develop a suitable WBL model in order to bridge the gap.

• Employees undertake a lot of learning in the workplace. It is therefore important to be able to recognise and value the skills acquired at work, whether they are informal "on the job" learning or more formal learning.

Strategic partnership programmes with sustainable engineering learning models are being developed to strengthen the links between industry and education.

The WBL framework are established with key employability skills aligned with the company's workplace tasks, "industry-ready" engineers are produced, and the companies are leaders in innovation worldwide.

• WBL takes place within the workplace as the primary form of study for learners (full-time employees). This is supported by HE institutions (e.g. MSc Shell corporate programmes).

• WBL incorporates a period of work placement experience into HE courses for future employment and vocation (e.g. Sonatrach corporate programmes, Transnational Education).

• WBL equips students with the skills and competencies to generate and commercialise innovations for the industry (e.g., MSc Oil and Gas Innovation programme). The programme is a partnership between a set of five Scottish universities.

• WBL where a learner's work experience is considered by the HE institutions to allow entry to the first stage of a course, exemption of specific elements of a course or advanced entry to a course i.e., RPEL.

3. Reflections | 4. Impact

• Embedding employability in curriculum design – students' and clients' involvement in course design and delivery has improved graduate employability, tackling persistent skills gaps and meeting the needs of business.

• Increasing participation in HE.

• The WBL framework has positive implications, addressing skills shortages, and enabling employers to shape their workforce in line with business demands while offering a high-value, low-cost option to retain and upskill staff.

• Facilitating student success and satisfaction through effective WBL curriculum design has been acknowledged as good practice according to industry partners and student feedback.

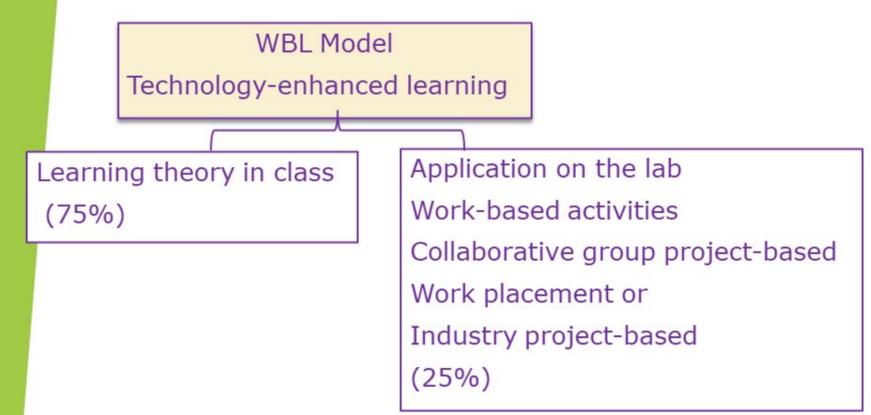
• WBL approach is industry research projects, contributing:

- technically and economically to the partners' assets as technical issues could be addressed by the research,
- employee career development,
- improved productivity and allowed staff to progress further within the company—locally and internationally.

• Career development is a powerful motivating tool and an effective long-term approach to keep companies at the leading edge of technology development and application.

• The development strategy helps attract and retain staff in order to meet the increasing demand for skilled workers.

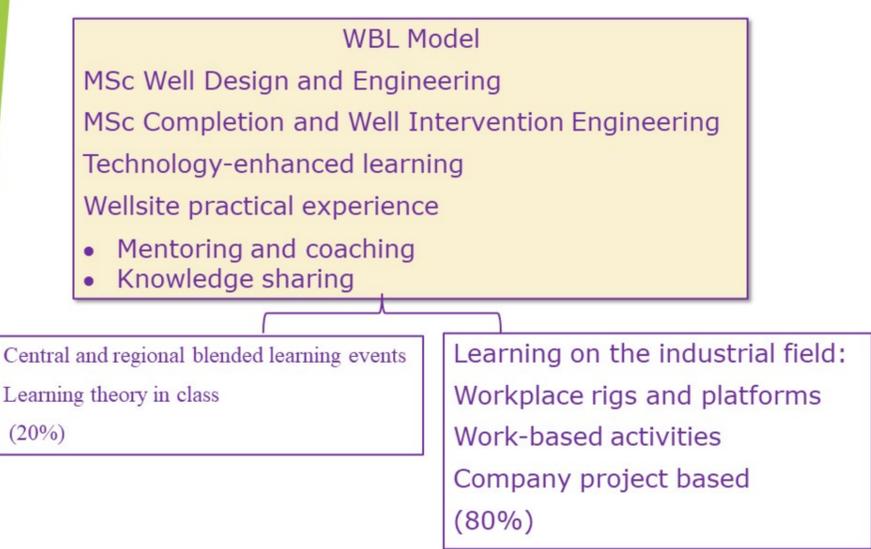
• The WBL framework promotes the UK education system abroad.



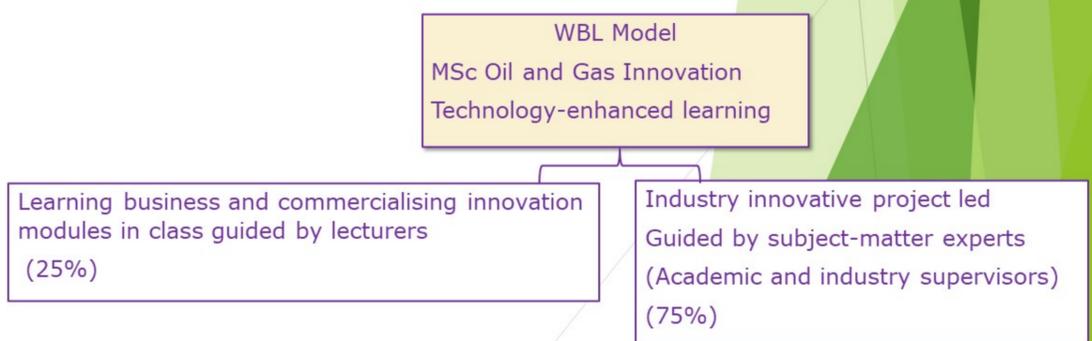
WBL Model Development



WBL Model Development (Sonatrach Partnership Programmes)



WBL Model Development (Shell Partnership Programmes)



WBL Model Development (Innovation Partnership Programmes)

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